SEQUENCE LISTING

<110> Immusol Inc.
       Hu, Xiuyuan
       Li, Henry
       Ke, Ning
       Grifman, Mirta
       Rogers, Cheryl
       Defife, Kristin
       Habita, Cellia
       Fan, Wufang
       Rhoades, Kristina
       Tan, Philip
       Tritz, Richard
       Wong-Staal, Flossie

<120> METHODS OF IDENTIFYING AGENTS THAT INHIBIT THE GROWTH OF CANCER
       CELLS

<130> P-IMM1008PC

<140> PCT/US2004/027672

<150> US 60/500,281
<151> 2003-09-04

<160> 38

<170> PatentIn version 3.2

<210> 1
<211> 5329
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1986)..(1986)
<223> n is a, c, g, or t

<400> 1
gtggtgtcgg tgtcggcagc atccccggcg ccctgctgcg gtcgccggag ccctcggcct   60

ctgttctcct cccccctcccg cccttacctc cacgcgggac cgcccgcgcc agtcaactcc   120

tcgcactttg cccctgcttg gcagcggata aaaggggggct gaggaaatac cggacacgtc   180

cacccgttgc cagctctagc ctttaaattc ccggctcggg acctccacgc accgggctag   240

cgccgacaac cagctagcgt gcaaggcgcc gcggctcagc gcgtaccggc gggcttcgaa   300

accgcagtcc tccggcgacc ccgaactccg ctccggagcc tcagccccct ggaaagtgat   360

cccggcatcg gagagccaag atgccggccc acttgctgca ggacgatatc tctagctcct   420

ataccaccac caccaccatt acagcgcctc cctccagggt cctgcagaat ggaggagata   480

agttggagac gatgcccctc tacttggaag acgacattcg ccctgatata aaagatgata   540

tatatgaccc cacctacaag gataaggaag gcccaagccc caaggttgaa tatgtctgga   600

gaaacatcat ccttatgtct ctgctacact tgggagccct gtatgggatc actttgattc   660

```
ctacctgcaa gttctacacc tggctttggg gggtattcta ctattttgtc agtgccctgg     720

gcataacagc aggagctcat cgtctgtgga gccaccgctc ttacaaagct cggctgcccc     780

tacggctctt tctgatcatt gccaacacaa tggcattcca gaatgatgtc tatgaatggg     840

ctcgtgacca ccgtgcccac cacaagtttt cagaaacaca tgctgatcct cataattccc     900

gacgtggctt tttcttctct cacgtgggtt ggctgcttgt gcgcaaacac ccagctgtca     960

aagagaaggg gagtacgcta gacttgtctg acctagaagc tgagaaactg gtgatgttcc    1020

agaggaggta ctacaaacct ggcttgctgc tgatgtgctt catcctgccc acgcttgtgc    1080

cctggtattt ctggggtgaa acttttcaaa acagtgtgtt cgttgccact ttcttgcgat    1140

atgctgtggt gcttaatgcc acctggctgg tgaacagtgc tgcccacctc ttcggatatc    1200

gtccttatga caagaacatt agcccccggg agaatatcct ggtttcactt ggagctgtgg    1260

gtgagggctt ccacaactac caccactcct ttccctatga ctactctgcc agtgagtacc    1320

gctggcacat caacttcacc acattcttca ttgattgcat ggccgccctc ggtctggcct    1380

atgaccggaa gaaagtctcc aaggccgcca tcttggccag gattaaaaga accggagatg    1440

gaaactacaa gagtggctga gtttggggtc cctcaggttc ctttttcaaa aaccagccag    1500

gcagaggttt taatgtctgt ttattaacta ctgaataatg ctaccaggat gctaaagatg    1560

atgatgttaa cccattccag tacagtattc ttttaaaatt caaaagtatt gaaagccaac    1620

aactctgcct ttatgatgct aagctgatat tatttcttct cttatcctct ctctcttcta    1680

ggcccattgt cctccttttc actttaatcg ccctcctttc ccttattgcc tcccaggcaa    1740

gcagctggtc agtctttgct cagtgtccag cttccaaagc ctagacaacc tttctgtagc    1800

ctaaaacgaa tggtctttgc tccagataac tctctttcct tgagctgttg tgagctttga    1860

agtaggtggc ttgagctaga gataaaacag aatcttctgg gtagtcccct gttgattatc    1920

ttcagcccag gcttttgcta gatggaatgg aaaagcaact tcatttgaca caaagcttct    1980

aaagcnaggt aaattgtcgg gggagagagt tagcatgtat gaatgtaagg atgagggaag    2040

cgaaggaacc tctcgccatg atcagacata cagctgccta cctaatgagg acttcaagcc    2100

ccaccacata gcatgcttcc tttctctcct ggctcggggt aaaaagtggc tgcggtgttt    2160

ggcaatgcta attcaatgcc gcaacatata gttgaggccg aggataaaga aaagacattt    2220

taagtttgta gtaaaagtgg tctctgctgg ggaagggttt tcttttcttt ttttctttaa    2280

taacaaggag atttcttagt tcatatatca agaagtcttg aagttgggtg tttccagaat    2340

tggtaaaaac agcagctcat agaattttga gtattccatg agctgctcat tacagttctt    2400

tcctctttct gctctgccat cttcaggata ttggttcttc ccctcatagt aataagatgg    2460
```

58

```
ctgtggcatt tccaaacatc caaaaaaagg gaaggattta aggaggtgaa gtcgggtcaa   2520

aaataaaata tatatacata tatacattgc ttagaacgtt aaactattag agtatttccc   2580

ttccaaagag ggatgtttgg aaaaaactct gaaggagagg aggaattagt tgggatgcca   2640

atttcctctc cactgctgga catgagatgg agaggctgag ggacaggatc tataggcagc   2700

ttctaagagc gaacttcaca taggaaggga tctgagaaca cgttcagggg ttgagaaggt   2760

tactgagtga gttattggga gtcttaataa actagatatt aggtccattc attaattagt   2820

tccagtttct ccttgaaatg agtaaaaact agaaggcttc tctccacagt gttgtgcccc   2880

ttcactcatt ttttttgag gagaaggggg tctctgttaa catctagcct aaagtataca   2940

aactgcctgg ggggcagggt taggaatctc ttcactaccc tgattcttga ttcctggctc   3000

taccctgtct gtccctttc tttgaccaga tctttctctt ccctgaacgt tttcttcttt   3060

ccctggacag gcagcctcct ttgtgtgtat tcagaggcag tgatgacttg ctgtccaggc   3120

agctccctcc tgcacacaga atgctcaggg tcactgaacc actgcttctc ttttgaaagt   3180

agagctagct gccactttca cgtggcctcc gcagtgtctc cacctacacc cctgtgctcc   3240

cctgccacac tgatggctca agacaaggct ggcaaaccct cccagaaaca tctctggccc   3300

agaaagcctc tctctccctc cctctctcat gagaagccaa gcgctcatgt tgagccagtg   3360

ggccagccac agagcaaaag agggtttatt ttcagtcccc tctctctggg tcagaaccag   3420

agggcatgct gaatgccccc tgcttacttg gtgagggtgc cccgcctgag tcagtgctct   3480

cagctggcag tgcaatgctt gtagaagtag gaggaaacag ttctcactgg gaagaagcaa   3540

gggcaagaac ccaagtgcct cacctcgaaa ggaggccctg ttccctggag tcagggtgaa   3600

ctgcaaagct ttggctgaga cctgggattt gagataccac aaaccctgct gaacacagtg   3660

tctgttcagc aaactaacca gcattcccta cagcctaggg cagacaatag tatagaagtc   3720

tggaaaaaaa caaaaacaga atttgagaac cttggaccac tcctgtccct gtagctcagt   3780

catcaaagca gaagtctggc tttgctctat taagattgga aatgtacact accaaacact   3840

cagtccactg ttgagcccca gtgctggaag ggaggaaggc ctttcttctg tgttaattgc   3900

gtagaggcta caggggttag cctggactaa aggcatcctt gtctttgagc tattcacctc   3960

agtagaaaag gatctaaggg aagatcactg tagtttagtt ctgttgacct gtgcacctac   4020

cccttggaaa tgtctgctgg tatttctaat tccacaggtc atcagatgcc tgcttgataa   4080

tatataaaca ataaaaacaa ctttcacttc ttcctattgt aatcgtgtgc catggatctg   4140

atctgtacca tgaccctaca taaggctgga tggcacctca ggctgagggc cccaatgtat   4200

gtgtggctgt gggtgtgggt gggagtgtgt ctgctgagta aggaacacga ttttcaagat   4260
```

59

tctaaagctc aattcaagtg acacattaat gataaactca gatctgatca agagtccgga   4320

tttctaacag tccttgcttt ggggggtgtg ctggcaactt agctcaggtg ccttacatct   4380

tttctaatca cagtgttgca tatgagcctg ccctcactcc ctctgcagaa tccctttgca   4440

cctgagaccc tactgaagtg gctggtagaa aaaggggcct gagtggagga ttatcagtat   4500

cacgatttgc aggattccct tctgggcttc attctggaaa cttttgttag ggctgctttt   4560

cttaagtgcc cacatttgat ggagggtgga aataatttga atgtatttga tttataagtt   4620

tttttttttt tttgggttaa aagatggttg tagcatttaa aatggaaaat tttctccttg   4680

gtttgctagt atcttgggtg tattctctgt aagtgtagct caaataggtc atcatgaaag   4740

gttaaaaaag cgaggtggcc atgttatgct ggtggttgcc agggcctcca accactgtgc   4800

cactgacttg ctgtgtgacc ctgggcaagt cacttaacta taaggtgcct cagttttcct   4860

tctgttaaaa tggggataat aatactgacc tacctcaaag ggcagttttg aggcatgact   4920

aatgcttttt agaaagcatt ttgggatcct tcagcacagg aattctcaag acctgagtat   4980

tttttataat aggaatgtcc accatgaact tgatacgtcc gtgtgtccca gatgctgtca   5040

ttagtctata tggttctcca agaaactgaa tgaatccatt ggagaagcgg tggataacta   5100

gccagacaaa atttgagaat acataaacaa cgcattgcca cggaaacata cagaggatgc   5160

cttttctgtg attgggtggg attttttccc tttttatgtg ggatatagta gttacttgtg   5220

acaagaataa ttttggaata atttctatta atatcaactc tgaagctaat tgtactaatc   5280

tgagattgtg tttgttcata ataaaagtga agtgaatctg attgcactg   5329

<210>   2
<211>   2775
<212>   DNA
<213>   Homo sapiens

<400>   2
gtactcgcca cggcacccag gctgcgcgca cgcggtcccg gtgtgcagct ggagagcgag   60

cggccaccgg gagcccccgg cacagcccgc gcccgccccg caggagcccg cgaagatgcc   120

ccggcgcagc ctgcacgcgg cggccgtgct cctgctggtg atcttaaagg aacagccttc   180

cagcccggcc ccagtgaacg gttccaagtg gacttatttt ggtcctgatg gggagaatag   240

ctggtccaag aagtacccgt cgtgtggggg cctgctgcag tcccccatag acctgcacag   300

tgacatcctc cagtatgacg ccagcctcac gcccctcgag ttccaaggct acaatctgtc   360

tgccaacaag cagtttctcc tgaccaacaa tggccattca gtgaagctga acctgccctc   420

ggacatgcac atccagggcc tccagtctcg ctacagtgcc acgcagctgc acctgcactg   480

```
ggggaacccg aatgacccgc acggctctga gcacaccgtc agcggacagc acttcgccgc    540

cgagctgcac attgtccatt ataactcaga cctttatcct gacgccagca ctgccagcaa    600

caagtcagaa ggcctcgctg tcctggctgt tctcattgag atgggctcct tcaatccgtc    660

ctatgacaag atcttcagtc accttcaaca tgtaaagtac aaaggccagg aagcattcgt    720

cccgggattc aacattgaag agctgcttcc ggagaggacc gctgaatatt accgctaccg    780

ggggtccctg accacacccc cttgcaaccc cactgtgctc tggacagttt tccgaaaccc    840

cgtgcaaatt tcccaggagc agctgctggc tttggagaca gccctgtact gcacacacat    900

ggacgaccct tcccccagag aaatgatcaa caacttccgg caggtccaga agttcgatga    960

gaggctggta tacacctcct tctcccaagt gcaagtctgt actgcggcag gactgagtct   1020

gggcatcatc ctctcactgg ccctggctgg cattcttggc atctgtattg tggtggtggt   1080

gtccatttgg cttttcagaa ggaagagtat caaaaaaggt gataacaagg gagtcattta   1140

caagccagcc accaagatgg agactgaggc ccacgcttga ggtccccgga gctcccgggc   1200

acatccagga aggaccttgc tttggaccct acacacttcg gctctctgga cacttgcgac   1260

acctcaaggt gttctctgta gctcaatctg caaacatgcc aggcctcagg gatcctctgc   1320

tgggtgcctc cttgccttgg gaccatggcc accccagagc catccgatcg atggatggga   1380

tgcactctca gaccaagcag caggaattca aagctgcttg ctgtaactgt gtgagattgt   1440

gaagtggtct gaattctgga atcacaaacc aagccatgct ggtgggccat taatggttgg   1500

aaaacacttt catccggggc tttgccagag cgtgctttca agtgtcctgg aaagtctgct   1560

gcttctccaa gctttcagac aagaatgtgc actctctgct taggtttttgc ttgggaaact   1620

caacttcttt cctctggaga cggggcatct ccctctgatt tccttctgct atgacaaaac   1680

cttttaatctg caccttacaa ctcggggaca aatggggaca ggaaggatca agttgtagag   1740

agaaaaaaga aaacaagaga tatacattgt gatatattag ggacactttc acagtcctgt   1800

cctctggatc acagacactg cacagacctt agggaatggc aggttcaagt tccacttctt   1860

ggtggggatg agaagggaga gagagctaga gggacaaaga gaatgagaag acatggatga   1920

tctgggagag tctcactttg gaatcagaat tggaatcaca ttctgtttat caagccataa   1980

tgtaaggaca gaataataca atattaagtc caaatccaac ctcctgtcag tggagcagtt   2040

atgtttttata ctctacagat tttacaaata atgaggctgt tccttgaaaa tgtgttgttg   2100

ctgtgtcctg gaggagacat gagttccgag atgacccaat ctgcctttga atctggagga   2160

aataggcaga aacaaaatga ctgtagaact tattctctgt aggccaaatt tcatttcagc   2220

cacttctgca ggatccctac tgccaacctg gaatggagac ttttatctac ttctctctct   2280
```

61

```
ctgaagatgt caaatcgtgg tttagatcaa atatatttca agctataaaa gcaggaggtt    2340

atctgtgcag ggggctggca tcatgtattt aggggcaagt aataatggaa tgctactaag    2400

atactccata ttcttccccg aatcacacag acagtttctg acaggcgcaa ctcctccatt    2460

ttcctcccgc aggtgagaac cctgtggaga tgagtcagtg ccatgactga gaaggaaccg    2520

accccctagtt gagagcacct tgcagttccc cgagaacttt ctgattcaca gtctcatttt    2580

gacagcatga aatgtcctct tgaagcatag cttttaaat atcttttcc ttctactcct    2640

ccctctgact ctaagaattc tctcttctgg aatcgcttga acccaggagg cggaggttgc    2700

agtaagccaa ggtcatgcca ctgcactcta gcctgggtga cagagcgaga ctccatctca    2760

aaaaaaaaaa aaaaa                                                     2775


<210>   3
<211>   5060
<212>   DNA
<213>   Homo sapiens

<400>   3
gcacgagggg agttcggcgt ttgctggggc tgcagcagct gaagtgtagt gttttcttgg      60

gactggcggt ctgcacttct ctcccgggtt ccatctcccc ccgcccggtg gtgaggccct     120

cgaggagggc tcggacgggt gtagcgatcc gcgctagagg aagacgaggc ccgggaacgc     180

atgtcccca gggcaggtta gggggctgga ggggtcaaat cccgggggtac ttgtggagac     240

tctttagcgt ggcttcttct ctctgctgag accccgagag ctttcccagt tctcctccca     300

ggaccaccgg ggttcctgaa gatcgggact tttctgcgcc cctccaccaa cagcccatct     360

cctgtctatg aagaaagacc cttcgtagaa acaacttccc cgctgctgac gcgttttccc     420

gtcccgtccc cgaagtagtc tactatgacc tcgttgtgag cctctgaacg attttgacac     480

tttcccgagg cctagggtat tatatcctaa ccttactaaa gaccacagag gtgcttgcca     540

ttatgggaaa tcagcttgct ggcattgctc cctcccagat cctttctgta gagagttatt     600

tttcagatat tcatgacttt gaatatgata aaagcctggg gagtactcgg tttttttaaag     660

ttgctcgagc caagcaccga gaaggcctgg tcgttgtgaa ggtttttgca attcaggatc     720

ccacattgcc tttaaccagc tataaacaag agctggagga actgaaaatc aggcttaatt     780

ctgcacagaa ttgtctacct ttccagaaag catcagaaaa agcatctgag aaagcagcta     840

tgctctttag gcagtatgtg cgagacaatc tctatgatcg catcagtacc cgtccattct     900

tgaataacat tgagaagcgc tggattgctt ccagatcct gacagctgtg gaccaagcac     960

acaaatctgg agttcgtcat ggggacatca agactgagaa tgtgatggtc accagttgga    1020

attgggttct tctaactgat tttgccagtt ttaagcccac ttatcttcca gaagacaacc    1080
```

```
cggcagattt caattatttc tttgacacat cacggaggag aacttgctat attgctcctg    1140

aacgttttgt tgatggtggg atgtttgcca ctgagttaga atatatgaga gatccttcaa    1200

ctccgcttgt agacttaaat agcaatcaga gaacaagagg agagttgaag agagcaatgg    1260

acatcttttc agcaggttgt gtgatagctg agctttttac agaaggtgta ccattatttg    1320

atctctctca acttttggct tatagaaatg gacatttttt ccctgaacaa gtgctaaata    1380

aaattgaaga tcacagtatc agagaattgg taactcagat gattcaccgt gagccagata    1440

aacgtttaga ggcagaagat tacttaaaac agcagcgtgg caatgccttt cctgaaatat    1500

tttacacttt tcttcagccc tacatggccc agtttgccaa ggaaacgttt ctttctgcag    1560

atgagcgtat tctggttata cggaaggatt tgggcaacat tattcacaat ctctgtggac    1620

atgatctgcc agaaaaagcc gaaggagagc ctaaggaaaa tgggctggtt atcttggtat    1680

ctgttataac atcctgccta cagaccctta aatactgtga ttccaaacta gctgctttgg    1740

aactgattct tcatttggct ccaagattaa gtgttgaaat ccttttggat cgtattactc    1800

catatctttt gcatttcagc aatgactctg ttcctagggt gagggctgaa gccttgagga    1860

cgttgaccaa agttcttgct ctcgtcaaag aggttcctcg taatgatatc aatatttatc    1920

cggaatacat tctgccaggc atagcccact tagcccaaga tgatgctact atcgttagac    1980

tagcctatgc tgaaaacata gctctgctgg cagaaacagc tctgagattc ctggaattag    2040

tacagttaaa aaatcttaat atggaaaatg accccaataa tgaagaaata gatgaggtta    2100

cacatccaaa tggaaattat gacacagagc tccaagcctt acatgaaatg gtccagcaga    2160

aagttgttac tttgctaagt gaccctgaaa atattgtaaa acaaaccttg atggaaaatg    2220

gaataacacg gctgtgtgta ttctttggac gtcagaaagc caacgatgtt ttgttgtccc    2280

acatgattac tttcctaaat gataagaatg attggcatct acgtggagca ttttttgata    2340

gtatagttgg tgttgctgcc tatgttggct ggcaaagctc ctcaattctc aagcctctgc    2400

tgcaacaagg tcttagtgat gctgaggaat ttgtcattgt gaaagctctt tatgccctta    2460

cttgtatgtg ccagttagga ctgctacaaa aaccccatgt ttacgaattt gccagtgata    2520

ttgcccccctt cctgtgtcat cccaatttat ggatacgtta tggtgccgtg ggatttatca    2580

cagtggtagc tcgtcaaata agtacagctg atgtctactg taaactgatg ccttatcttg    2640

acccatatat tacccaacca ataatacaga ttgaaagaaa acttgttctg ctcagtgttt    2700

taaaggaacc agtaagtcgt tctatatttg attatgcttt gaggtctaaa gatattacta    2760

gcttgttcag acatcttcac atgcgtcaga agaaacgaaa tggttctctt cccgactgcc    2820

ctccgccaga ggatcctgcc atagcacagc ttctgaagaa gttgctctca cagggaatga    2880
```

63

```
cagaggaaga ggaagacaaa cttctggcac tgaaagactt catgatgaaa tctaataaag   2940

caaaggccaa tatagtggac cagagccatc ttcatgatag tagtcagaaa ggtgtaattg   3000

acttggcagc tttaggcata actgggagac aagttgatct tgttaaaacc aaacaagaac   3060

cagatgacaa acgggccaga aaacatgtaa aacaagactc aaatgtaaat gaagaatgga   3120

aaagcatgtt tgggtcactg gacccaccaa acatgccaca ggccctacct aaagggagtg   3180

atcaggaggt gattcagact gggaaacctc ctcgttccga gtcctctgct ggcatttgtg   3240

tccctttgtc aacttcttca caggttccag aagtgacaac tgtccaaaat aaaaaaccag   3300

taataccggt tttaagtagt acaatcttac catccaccta tcagattcga attacaactt   3360

gtaaaactga acttcagcaa ctcatccagc aaaagcggga gcagtgcaat gctgagagaa   3420

tagctaagca gatgatggaa aatgctgaat gggagagtaa accaccacca cctggatggc   3480

gtcctaaagg gctgttagtt gcccatcttc atgagcataa atctgctgtg aatcgaatta   3540

gagtctctga tgaacactca ctttttgcaa catgttcaaa tgatggcaca gtgaaaatct   3600

ggaacagtca aaagatggag gggaagacca ccactaccag atctattctt acatacagcc   3660

gaattggagg acgagtcaag acgctcacat tctgccaagg ctcccactat ttagccatag   3720

catctgataa tggtgctgtc cagcttcttg gaattgaggc ttctaagctg cccaagtctc   3780

ctaaaatcca tcctctacaa agcagaattc tagatcagaa ggaggacggt tgtgttgtgg   3840

atatgcatca cttcaactct ggagcacagt ctgttcttgc ctatgccact gtgaatggct   3900

ctctggttgg ctgggacctt aggtcttcaa gcaatgcgtg gactttaaag catgatttaa   3960

agtcgggcct catcacttcc tttgctgtgg acatccacca atgctggctc tgcattggta   4020

caagcagtgg taccatggct tgttgggaca tgaggttcca gttgccaatt tcaagtcact   4080

gtcatccttc cagggctcga atcagacgcc tctcaatgca ccctctgtat cagtcctggg   4140

tgattgcagc tgttcagggc aacaacgaag tgtccatgtg ggacatggag actggtgaca   4200

gaagatttac tctctgggcc agcagtgcac caccactttc tgaattacag ccttctcctc   4260

atagcgtcca tggtatctac tgtagtcctg cagatggaaa tcctatccta ctaacagctg   4320

gctcagatat gaaaataagg ttttgggact tggcttaccc agaaaggtcc tatgttgttg   4380

caggaagtac tagttcccca tctgtgtcct actacaggaa aataattgaa ggcactgaag   4440

ttgtccagga aattcagaat aagcagaaag taggaccaag tgatgacacc cctcgaaggg   4500

gcccagagtc cctgcccgtg ggacatcatg acatcatcac tgatgtcgcc acattccaga   4560

ccacacaggg cttcatcgta actgcttcta gagatgggat tgtgaaggtg tggaaataaa   4620

acctactgat ttgtataaat tttaatagtt ataaatataa tactataact cgagaaaagg   4680
```

64

catttctaga gaacagattc atttgcttaa ttttcaaaat tatgtctcca tattactgtt   4740

tcatgactga ctgactaaat gacacccaaa atggttaaga tgtacttgac tagtttactt   4800

atgcatctct ttgcaagaat cagccagcca acaatgtctg ggatttttat tgtatatgtt   4860

atagaggtga gaaatgtaaa atatgaaaat gaatatgttt attttgtatt gaaaaagatg   4920

gttgaaaaga tggttgtaag ctattatagt ataaacacat ttttgctatt aaaaatgcta   4980

ttcaaagcag ttaaactgta aaaaaaaaa aaaaaaaaa aaaaaaaaa aaaaaaaac   5040

tcgaggggggg gcccggtacc   5060

<210>   4
<211>   2131
<212>   DNA
<213>   Homo sapiens

<400>   4
ctctttataa tttagtttcc atagaagtta tatgtgcatt taaaaaaatt caatgctgga   60

gcgaccgtgt ctggggagcc gagccccgct tctcgctgcg gtgagcccgg actggggcac   120

gcactgcgca gactccccgc tgcagtgggc ggagtcccac aggccccgcc cctcctccca   180

ccctcgttca gcctgtccag acagaagctg gggcccagcg gaggtagcag cagacgcctg   240

agagcgaggc cgaggccctc agggtttgga gaccctgaca cacccacctt ctcacctggg   300

ctctgcgtat cccccagcct tgagggaaga tgaagcctaa actgatgtac caggagctga   360

aggtgcctgc agaggagccc gccaatgagc tgcccatgaa tgagattgag gcgtggaagg   420

ctgcggaaaa gaaagcccgc tgggtcctgc tggtcctcat tctggcggtt gtgggcttcg   480

gagcctgatg actcagctgt ttctatggga atacggcgac ttgcatctct ttgggcccaa   540

ccagcgccca gcccccctgct atgacccttg cgaagcagtg ctggtggaaa gcattcctga   600

gggcctggac ttccccaatg cctccacggg gaacccttcc accagccagg cctggctggg   660

cctgctcgcc ggtgcgcaca gcagcctgga catcgcctcc ttctactgga ccctcaccaa   720

caatgacacc cacacgcagg agccctctgc ccagcagggt gaggaggtcc tccggcagct   780

gcagaccctg gcaccaaagg gcgtgaacgt ccgcatcgct gtgagcaagc ccagcgggcc   840

ccagccacag gcggacctgc aggctctgct gcagagcggt gcccaggtcc gcatggtgga   900

catgcagaag ctgacccatg gcgtcctgca taccaagttc tgggtggtgg accagaccca   960

cttctacctg ggcagtgcca acatggactg gcgttcactg acccaggtca aggagctggg   1020

cgtggtcatg tacaactgca gctgcctggc tcgagacctg accaagatct ttgaggccta   1080

ctggttcctg ggccaggcag gcagctccat cccatcaact tggccccggt tctatgacac   1140

```
ccgctacaac caagagacac caatggagat ctgcctcaat ggaacccctg ctctggccta    1200

cctggcgagt gcgcccccac ccctgtgtcc aagtggccgc actccagacc tgaaggctct    1260

actcaacgtg gtggacaatg cccggagttt catctacgtc gctgtcatga actacctgcc    1320

cactctggag ttctcccacc ctcacaggtt ctggcctgcc attgacgatg ggctgcggcg    1380

ggccacctac gagcgtggcg tcaaggtgcg cctgctcatc agctgctggg gacactcgga    1440

gccatccatg cgggccttcc tgctctctct ggctgccctg cgtgacaacc atacccactc    1500

tgacatccag gtgaaactct ttgtggtccc cgcggatgag gcccaggctc gaatcccata    1560

tgcccgtgtc aaccacaaca agtacatggt gactgaacgc gccacctaca tcggaacctc    1620

caactggtct ggcaactact tcacggagac ggcgggcacc tcgctgctgg tgacgcagaa    1680

tgggaggggc ggcctgcgga gccagctgga ggccattttc ctgagggact gggactcccc    1740

ttacattcat gaccttgaca cctcagctga cagcgtgggc aacgcctgcc gcctgctctg    1800

aggcccgatc cagtgggcag gccaaggcct gctgggcccc cgcggaccca ggtgctctgg    1860

gtcacggtcc ctgtccccgc acccccgctt ctgtctgccc cattgtggct cctcaggctc    1920

tctccctgc tctcccacct ctacctccac ccccaccggc ctgacgctgt ggccccggga    1980

cccagcagag. ctggggagg gatcagcccc caaagaaatg ggggtgcatg ctggcctgcc    2040

ccctggccca cccccacttt ccagggcaaa aagggcccag ggttataata agtaaataac    2100

ttgtctgtaa aaaaaaaaa aaaaaaaaa a                                     2131


<210>   5
<211>   2258
<212>   DNA
<213>   Homo sapiens

<400>   5
ggcacgaggc gacgacctgt ctcgccgagc gcacgccttg ccgccgcccc gcagaaatgc      60

ttcggttacc cacagtcttt cgccagatga gaccggtgtc cagggtactg gctcctcatc     120

tcactcgggc ttatgccaaa gatgtaaaat ttggtgcaga tgcccgagcc ttaatgcttc     180

aaggtgtaga ccttttagcc gatgctgtgg ccgttacaat ggggccaaag ggaagaacag     240

tgattattga gcagagttgg ggaagtccca agtaacaaa agatggtgtg actgttgcaa     300

agtcaattga cttaaaagat aaatacaaaa acattggagc taaacttgtt caagatgttg     360

ccaataacac aaatgaagaa gctggggatg gcactaccac tgctactgta ctggcacgct     420

ctatagccaa ggaaggcttc gagaagatta gcaaaggtgc taatccagtg gaaatcagga     480

gaggtgtgat gttagctgtt gatgctgtaa ttgctgaact taaaaagcag tctaaacctg     540

tgaccacccc tgaagaaatt gcacaggttg ctacgatttc tgcaaacgga gacaaagaaa     600
```

66

```
ttggcaatat catctctgat gcaatgaaaa aagttggaag aaagggtgtc atcacagtaa      660

aggatggaaa aacactgaat gatgaattag aaattattga aggcatgaag tttgatcgag      720

gctatatttc tccatacttt attaatacat caaaaggtca gaaatgtgaa ttccaggatg      780

cctatgttct gttgagtgaa aagaaaattt ctagtatcca gtccattgta cctgctcttg      840

aaattgccaa tgctcaccgt aagcctttgg tcataatcgc tgaagatgtt gatggagaag      900

ctctaagtac actcgtcttg aataggctaa aggttggtct tcaggttgtg gcagtcaagg      960

ctccagggtt tggtgacaat agaaagaacc agcttaaaga tatggctatt gctactggtg     1020

gtgcagtgtt tggagaagag ggattgaccc tgaatcttga agacgttcag cctcatgact     1080

taggaaaagt tggagaggtc attgtgacca aagacgatgc catgctctta aaaggaaaag     1140

gtgacaaggc tcaaattgaa aaacgtattc aagaaatcat tgagcagtta gatgtcacaa     1200

ctagtgaata tgaaaaggaa aaactgaatg aacggcttgc aaaactttca gatggagtgg     1260

ctgtgctgaa ggttggtggg acaagtgatg ttgaagtgaa tgaaaagaaa gacagagtta     1320

cagatgccct taatgctaca agagctgctg ttgaagaagg cattgttttg ggaggggtt      1380

gtgccctcct tcgatgcatt ccagccttgg actcattgac tccagctaat gaagatcaaa     1440

aaattggtat agaaattatt aaaagaacac tcaaaattcc agcaatgacc attgctaaga     1500

atgcaggtgt tgaaggatct ttgatagttg agaaaattat gcaaagttcc tcagaagttg     1560

gttatgatgc tatggctgga gatttgtga atatggtgga aaaaggaatc attgacccaa      1620

caaaggttgt gagaactgct ttattggatg ctgctggtgt ggcctctctg ttaactacag     1680

cagaagttgt agtcacagaa attcctaaag aagagaagga ccctggaatg ggtgcaatgg     1740

gtggaatggg aggtggtatg ggaggtggca tgttctaact cctagactag tgctttacct     1800

ttattaatga actgtgacag gaagcccaag gcagtgttcc tcaccaataa cttcagagaa     1860

gtcagttgga gaaatgaag aaaaaggctg gctgaaaatc actataacca tcagttactg      1920

gtttcagttg acaaaatata taatggttta ctgctgtcat tgtccatgcc tacagataat     1980

ttattttgta tttttgaata aaaaacattt gtacattcct gatactgggt acaagagcca     2040

tgtaccagtg tactgctttc aacttaaatc actgaggcat ttttactact attctgttaa     2100

aatcaggatt ttagtgcttg ccaccaccag atgagaagtt aagcagcctt tctgtggaga     2160

gtgagaataa ttgtgtacaa agtagagaag tatccaatta tgtgacaacc tttgtgtaat     2220

aaaaatttgt ttaaagttaa aaaaaaaaa aaaaaaaa                              2258
```

<210>   6
<211>   3365

<212> DNA
<213> Homo sapiens

<400> 6

```
agcatccgga gcggagctgc agcagcgccg ccttttgtgc tgcggccgcg gagcccccga      60

gggcccagtg ttcaccatca taccaggggc cagaggcgat ggcttgcctc catgagaccc     120

gaacaccctc tccttccttt gggggctttg tgtctaccct aagtgaggca tccatgcgca     180

agctggaccc agacacttct gactgcactc ccgagaagga cctgacgcct acccatgtcc     240

tgcagctaca tgagcaggat gcaggggggcc caggggggagc agctgggtca cctgagagtc     300

gggcatccag agttcgagct gacgaggtgc gactgcagtg ccagagtggc agtggcttcc     360

ttgagggcct ctttggctgc ctgcgccctg tctggaccat gattggcaaa gcctactcca     420

ctgagcacaa gcagcagcag gaagaccttt gggaggtccc ctttgaggaa atcctggacc     480

tgcagtgggt gggctcaggg gcccaggggtg ctgtcttcct ggggcgcttc cacggggagg     540

aggtggctgt gaagaaggtg cgagacctca aagaaaccga catcaagcac ttgcgaaagc     600

tgaagcaccc caacatcatc actttcaagg gtgtgtgcac ccaggctccc tgctactgca     660

tcctcatgga gttctgcgcc cagggccagc tgtatgaggt actgcgggct ggccgccctg     720

tcacccccctc cttactggtt gactggtcca tgggcatcgc tggtggcatg aactacctgc     780

acctgcacaa gattatccac agggatctca agtcacccaa catgctaatc acctacgacg     840

atgtggtgaa gatctcagat tttggcactt ccaaggagct gagtgacaag agcaccaaga     900

tgtcctttgc agggacagta gcctggatgg cccctgaggt gatccgcaat gaacctgtgt     960

ctgagaaggt cgacatctgg tcctttggcg tggtgctatg ggaactgctg actggtgaga    1020

tcccctacaa agacgtagat tcctcagcca ttatctgggg tgtgggaagc aacagtctcc    1080

atctgcccgt gccctccagt tgcccagatg gtttcaagat cctgcttcgc cagtgctgga    1140

atagcaaacc acgaaatcgc ccatcattcc gacagatcct gctgcatctg gacattgcct    1200

cagctgatgt actctccaca ccccaggaga cttactttaa gtcccaggca gagtggcggg    1260

aagaagtaaa actgcacttt gaaaagatta agtcagaagg gacctgtctg caccgcctag    1320

aagaggaact ggtgatgagg aggagggagg agctcagaca cgccctggac atcagggagc    1380

actatgaaag gaagctggag agagccaaca acctgtatat ggaacttaat gccctcatgt    1440

tgcagctgga actcaaggag agggagctgc tcaggcgaga gcaagcttta gagcggaggt    1500

gcccaggcct gctgaagcca caccccttccc ggggcctcct gcatggaaac acaatggaga    1560

agcttatcaa gaagaggaat gtgccacaga agctgtcacc ccatagcaaa aggccagata    1620

tcctcaagac ggagtctttg ctccctaaac tagatgcagc cctgagtggg gtggggcttc    1680
```

68

```
ctgggtgtcc taaggccccc ccctcaccag gacggagtcg ccgtggcaag acccgtcacc   1740

gcaaggccag cgccaagggg agctgtgggg acctgcctgg gcttcgtaca gctgtgccac   1800

cccatgaacc tggaggacca ggaagcccag ggggcctagg aggggga ccc tcagcctggg   1860

aggcctgccc tcccgccctc cgtgggcttc atcatgacct cctgctccgc aaaatgtctt   1920

catcgtcccc agacctgctg tcagcagcac tagggtcccg gggccggggg gccacaggcg   1980

gagctgggga tcctggctca ccacctccgg cccggggtga caccccacca agtgagggct   2040

cagcccctgg ctccaccagc ccagattcac ctggggagc caaagggaa ccacctcctc   2100

cagtagggcc tggtgaaggt gtggggcttc tgggaactgg aagggaaggg acctcaggcc   2160

ggggaggaag ccgggctggg tcccagcact tgaccccagc tgcactgctg tacagggctg   2220

ccgtcacccg aagtcagaaa cgtggcatct catcggaaga ggaggaagga gaggtagaca   2280

gtgaagtaga gctgacatca agccagaggt ggcctcagag cctgaacatg cgccagtcac   2340

tatctacctt cagctcagag aatccatcag atggggagga aggcacagct agtgaacctt   2400

cccccagtgg cacacctgaa gttggcagca ccaacactga tgagcggcca gatgagcggt   2460

ctgatgacat gtgctcccag ggctcagaaa tcccactgga cccacctcct tcagaggtca   2520

tccctggccc tgaacccagc tccctgccca ttccacacca ggaacttctc agagagcggg   2580

gccctcccaa ttctgaggac tcagactgtg acagcactga attggacaac tccaacagcg   2640

ttgatgcctt gcggccccca gcttccctcc ctccatgaaa gccactcgta ttccttgtac   2700

atagagaaat atttatatgg attatatata tatacatata tatatatata tgcgccacat   2760

aatcaacaga aagatggggc tgtcccagcc gtaagtcagg ctcgagggag actgatcccc   2820

tgaccaattc acctgataaa ctctagggac actggcagct gtggaaatga atgaggcaca   2880

gccgtagagc tgtggctaag ggcaagcccc ttcctgcccc accccattcc ttatattcag   2940

caagcaacaa ggcaatagaa aagccaggt tgtctttata ttctttatcc ccaaataata   3000

gggggtgggg ggaggggcgg tgggagggc aggagagaaa accacttaga ctgcactttt   3060

ctgttccgtt tactctgttt acacattttg cacttgggag gagggaggct aaggctgggt   3120

cctcccctct gaggtttctc agtggcaat gtaactcatt tttttgtccc accatttatc   3180

ttctctgccc aagccctgtc ttaaggccca gggggaggtt aggagactga tagcatgtga   3240

tggctcaggc tgaagaaccg gggtgctgtt taagtccctg cttttatcct ggtgcctgat   3300

tggggtgggg actgtcctac tgtaaccct gtgaaaaacc ttgaaatata acactccatg   3360

cagga                                                               3365


<210>   7
```

<211> 359
<212> PRT
<213> Homo sapiens

<400> 7

Met Pro Ala His Leu Leu Gln Asp Asp Ile Ser Ser Ser Tyr Thr Thr
1   5   10   15

Thr Thr Thr Ile Thr Ala Pro Pro Ser Arg Val Leu Gln Asn Gly Gly
            20   25   30

Asp Lys Leu Glu Thr Met Pro Leu Tyr Leu Glu Asp Asp Ile Arg Pro
        35   40   45

Asp Ile Lys Asp Asp Ile Tyr Asp Pro Thr Tyr Lys Asp Lys Glu Gly
        50   55   60

Pro Ser Pro Lys Val Glu Tyr Val Trp Arg Asn Ile Ile Leu Met Ser
65   70   75   80

Leu Leu His Leu Gly Ala Leu Tyr Gly Ile Thr Leu Ile Pro Thr Cys
                85   90   95

Lys Phe Tyr Thr Trp Leu Trp Gly Val Phe Tyr Tyr Phe Val Ser Ala
                100   105   110

Leu Gly Ile Thr Ala Gly Ala His Arg Leu Trp Ser His Arg Ser Tyr
                115   120   125

Lys Ala Arg Leu Pro Leu Arg Leu Phe Leu Ile Ile Ala Asn Thr Met
        130   135   140

Ala Phe Gln Asn Asp Val Tyr Glu Trp Ala Arg Asp His Arg Ala His
145   150   155   160

His Lys Phe Ser Glu Thr His Ala Asp Pro His Asn Ser Arg Arg Gly
                165   170   175

Phe Phe Phe Ser His Val Gly Trp Leu Leu Val Arg Lys His Pro Ala
                180   185   190

Val Lys Glu Lys Gly Ser Thr Leu Asp Leu Ser Asp Leu Glu Ala Glu
        195   200   205

Lys Leu Val Met Phe Gln Arg Arg Tyr Tyr Lys Pro Gly Leu Leu Leu
        210   215   220

70

Met Cys Phe Ile Leu Pro Thr Leu Val Pro Trp Tyr Phe Trp Gly Glu
225   230   235   240

Thr Phe Gln Asn Ser Val Phe Val Ala Thr Phe Leu Arg Tyr Ala Val
            245   250   255

Val Leu Asn Ala Thr Trp Leu Val Asn Ser Ala Ala His Leu Phe Gly
            260   265   270

Tyr Arg Pro Tyr Asp Lys Asn Ile Ser Pro Arg Glu Asn Ile Leu Val
            275   280   285

Ser Leu Gly Ala Val Gly Glu Gly Phe His Asn Tyr His His Ser Phe
        290   295   300

Pro Tyr Asp Tyr Ser Ala Ser Glu Tyr Arg Trp His Ile Asn Phe Thr
305   310   315   320

Thr Phe Phe Ile Asp Cys Met Ala Ala Leu Gly Leu Ala Tyr Asp Arg
            325   330   335

Lys Lys Val Ser Lys Ala Ala Ile Leu Ala Arg Ile Lys Arg Thr Gly
            340   345   350

Asp Gly Asn Tyr Lys Ser Gly
        355

<210> 8
<211> 354
<212> PRT
<213> Homo sapiens

<400> 8

Met Pro Arg Arg Ser Leu His Ala Ala Ala Val Leu Leu Leu Val Ile
1   5   10   15

Leu Lys Glu Gln Pro Ser Ser Pro Ala Pro Val Asn Gly Ser Lys Trp
            20   25   30

Thr Tyr Phe Gly Pro Asp Gly Glu Asn Ser Trp Ser Lys Lys Tyr Pro
            35   40   45

Ser Cys Gly Gly Leu Leu Gln Ser Pro Ile Asp Leu His Ser Asp Ile
        50   55   60

71

```
Leu Gln Tyr Asp Ala Ser Leu Thr Pro Leu Glu Phe Gln Gly Tyr Asn
65              70              75              80


Leu Ser Ala Asn Lys Gln Phe Leu Leu Thr Asn Asn Gly His Ser Val
            85              90              95


Lys Leu Asn Leu Pro Ser Asp Met His Ile Gln Gly Leu Gln Ser Arg
            100             105             110


Tyr Ser Ala Thr Gln Leu His Leu His Trp Gly Asn Pro Asn Asp Pro
            115             120             125


His Gly Ser Glu His Thr Val Ser Gly Gln His Phe Ala Ala Glu Leu
    130             135             140


His Ile Val His Tyr Asn Ser Asp Leu Tyr Pro Asp Ala Ser Thr Ala
145             150             155             160


Ser Asn Lys Ser Glu Gly Leu Ala Val Leu Ala Val Leu Ile Glu Met
            165             170             175


Gly Ser Phe Asn Pro Ser Tyr Asp Lys Ile Phe Ser His Leu Gln His
            180             185             190


Val Lys Tyr Lys Gly Gln Glu Ala Phe Val Pro Gly Phe Asn Ile Glu
    195             200             205


Glu Leu Leu Pro Glu Arg Thr Ala Glu Tyr Tyr Arg Tyr Arg Gly Ser
    210             215             220


Leu Thr Thr Pro Pro Cys Asn Pro Thr Val Leu Trp Thr Val Phe Arg
225             230             235             240


Asn Pro Val Gln Ile Ser Gln Glu Gln Leu Leu Ala Leu Glu Thr Ala
            245             250             255


Leu Tyr Cys Thr His Met Asp Asp Pro Ser Pro Arg Glu Met Ile Asn
            260             265             270


Asn Phe Arg Gln Val Gln Lys Phe Asp Glu Arg Leu Val Tyr Thr Ser
            275             280             285


Phe Ser Gln Val Gln Val Cys Thr Ala Ala Gly Leu Ser Leu Gly Ile
    290             295             300
```

72

```
Ile Leu Ser Leu Ala Leu Ala Gly Ile Leu Gly Ile Cys Ile Val Val
305             310             315             320


Val Val Ser Ile Trp Leu Phe Arg Arg Lys Ser Ile Lys Lys Gly Asp
            325             330             335


Asn Lys Gly Val Ile Tyr Lys Pro Ala Thr Lys Met Glu Thr Glu Ala
            340             345             350


His Ala


<210>   9
<211>   1358
<212>   PRT
<213>   Homo sapiens

<400>   9

Met Gly Asn Gln Leu Ala Gly Ile Ala Pro Ser Gln Ile Leu Ser Val
1               5               10              15


Glu Ser Tyr Phe Ser Asp Ile His Asp Phe Glu Tyr Asp Lys Ser Leu
            20              25              30


Gly Ser Thr Arg Phe Phe Lys Val Ala Arg Ala Lys His Arg Glu Gly
        35              40              45


Leu Val Val Lys Val Phe Ala Ile Gln Asp Pro Thr Leu Pro Leu
    50              55              60


Thr Ser Tyr Lys Gln Glu Leu Glu Glu Leu Lys Ile Arg Leu Asn Ser
65              70              75              80


Ala Gln Asn Cys Leu Pro Phe Gln Lys Ala Ser Glu Lys Ala Ser Glu
            85              90              95


Lys Ala Ala Met Leu Phe Arg Gln Tyr Val Arg Asp Asn Leu Tyr Asp
            100             105             110


Arg Ile Ser Thr Arg Pro Phe Leu Asn Asn Ile Glu Lys Arg Trp Ile
            115             120             125


Ala Phe Gln Ile Leu Thr Ala Val Asp Gln Ala His Lys Ser Gly Val
    130             135             140
```

73

```
Arg His Gly Asp Ile Lys Thr Glu Asn Val Met Val Thr Ser Trp Asn
145             150             155             160


Trp Val Leu Leu Thr Asp Phe Ala Ser Phe Lys Pro Thr Tyr Leu Pro
            165             170             175


Glu Asp Asn Pro Ala Asp Phe Asn Tyr Phe Phe Asp Thr Ser Arg Arg
        180             185             190


Arg Thr Cys Tyr Ile Ala Pro Glu Arg Phe Val Asp Gly Gly Met Phe
        195             200             205


Ala Thr Glu Leu Glu Tyr Met Arg Asp Pro Ser Thr Pro Leu Val Asp
    210             215             220


Leu Asn Ser Asn Gln Arg Thr Arg Gly Glu Leu Lys Arg Ala Met Asp
225             230             235             240


Ile Phe Ser Ala Gly Cys Val Ile Ala Glu Leu Phe Thr Glu Gly Val
            245             250             255


Pro Leu Phe Asp Leu Ser Gln Leu Leu Ala Tyr Arg Asn Gly His Phe
        260             265             270


Phe Pro Glu Gln Val Leu Asn Lys Ile Glu Asp His Ser Ile Arg Glu
        275             280             285


Leu Val Thr Gln Met Ile His Arg Glu Pro Asp Lys Arg Leu Glu Ala
    290             295             300


Glu Asp Tyr Leu Lys Gln Gln Arg Gly Asn Ala Phe Pro Glu Ile Phe
305             310             315             320


Tyr Thr Phe Leu Gln Pro Tyr Met Ala Gln Phe Ala Lys Glu Thr Phe
            325             330             335


Leu Ser Ala Asp Glu Arg Ile Leu Val Ile Arg Lys Asp Leu Gly Asn
        340             345             350


Ile Ile His Asn Leu Cys Gly His Asp Leu Pro Glu Lys Ala Glu Gly
        355             360             365


Glu Pro Lys Glu Asn Gly Leu Val Ile Leu Val Ser Val Ile Thr Ser
370             375             380
```

74

```
Cys Leu Gln Thr Leu Lys Tyr Cys Asp Ser Lys Leu Ala Ala Leu Glu
385             390             395             400

Leu Ile Leu His Leu Ala Pro Arg Leu Ser Val Glu Ile Leu Leu Asp
            405             410             415

Arg Ile Thr Pro Tyr Leu Leu His Phe Ser Asn Asp Ser Val Pro Arg
            420             425             430

Val Arg Ala Glu Ala Leu Arg Thr Leu Thr Lys Val Leu Ala Leu Val
        435             440             445

Lys Glu Val Pro Arg Asn Asp Ile Asn Ile Tyr Pro Glu Tyr Ile Leu
    450             455             460

Pro Gly Ile Ala His Leu Ala Gln Asp Asp Ala Thr Ile Val Arg Leu
465             470             475             480

Ala Tyr Ala Glu Asn Ile Ala Leu Leu Ala Glu Thr Ala Leu Arg Phe
            485             490             495

Leu Glu Leu Val Gln Leu Lys Asn Leu Asn Met Glu Asn Asp Pro Asn
        500             505             510

Asn Glu Glu Ile Asp Glu Val Thr His Pro Asn Gly Asn Tyr Asp Thr
    515             520             525

Glu Leu Gln Ala Leu His Glu Met Val Gln Gln Lys Val Val Thr Leu
    530             535             540

Leu Ser Asp Pro Glu Asn Ile Val Lys Gln Thr Leu Met Glu Asn Gly
545             550             555             560

Ile Thr Arg Leu Cys Val Phe Phe Gly Arg Gln Lys Ala Asn Asp Val
            565             570             575

Leu Leu Ser His Met Ile Thr Phe Leu Asn Asp Lys Asn Asp Trp His
            580             585             590

Leu Arg Gly Ala Phe Phe Asp Ser Ile Val Gly Val Ala Ala Tyr Val
        595             600             605

Gly Trp Gln Ser Ser Ser Ile Leu Lys Pro Leu Leu Gln Gln Gly Leu
    610             615             620
```

Ser Asp Ala Glu Glu Phe Val Ile Val Lys Ala Leu Tyr Ala Leu Thr
625   630   635   640

Cys Met Cys Gln Leu Gly Leu Leu Gln Lys Pro His Val Tyr Glu Phe
            645   650   655

Ala Ser Asp Ile Ala Pro Phe Leu Cys His Pro Asn Leu Trp Ile Arg
            660   665   670

Tyr Gly Ala Val Gly Phe Ile Thr Val Val Ala Arg Gln Ile Ser Thr
            675   680   685

Ala Asp Val Tyr Cys Lys Leu Met Pro Tyr Leu Asp Pro Tyr Ile Thr
            690   695   700

Gln Pro Ile Ile Gln Ile Glu Arg Lys Leu Val Leu Leu Ser Val Leu
705   710   715   720

Lys Glu Pro Val Ser Arg Ser Ile Phe Asp Tyr Ala Leu Arg Ser Lys
            725   730   735

Asp Ile Thr Ser Leu Phe Arg His Leu His Met Arg Gln Lys Lys Arg
            740   745   750

Asn Gly Ser Leu Pro Asp Cys Pro Pro Pro Glu Asp Pro Ala Ile Ala
            755   760   765

Gln Leu Leu Lys Lys Leu Leu Ser Gln Gly Met Thr Glu Glu Glu Glu
            770   775   780

Asp Lys Leu Leu Ala Leu Lys Asp Phe Met Met Lys Ser Asn Lys Ala
785   790   795   800

Lys Ala Asn Ile Val Asp Gln Ser His Leu His Asp Ser Ser Gln Lys
            805   810   815

Gly Val Ile Asp Leu Ala Ala Leu Gly Ile Thr Gly Arg Gln Val Asp
            820   825   830

Leu Val Lys Thr Lys Gln Glu Pro Asp Asp Lys Arg Ala Arg Lys His
            835   840   845

Val Lys Gln Asp Ser Asn Val Asn Glu Glu Trp Lys Ser Met Phe Gly
850   855   860

76

Ser Leu Asp Pro Pro Asn Met Pro Gln Ala Leu Pro Lys Gly Ser Asp
865   870   875   880

Gln Glu Val Ile Gln Thr Gly Lys Pro Pro Arg Ser Glu Ser Ser Ala
                885   890   895

Gly Ile Cys Val Pro Leu Ser Thr Ser Ser Gln Val Pro Glu Val Thr
            900   905   910

Thr Val Gln Asn Lys Lys Pro Val Ile Pro Val Leu Ser Ser Thr Ile
        915   920   925

Leu Pro Ser Thr Tyr Gln Ile Arg Ile Thr Thr Cys Lys Thr Glu Leu
    930   935   940

Gln Gln Leu Ile Gln Gln Lys Arg Glu Gln Cys Asn Ala Glu Arg Ile
945   950   955   960

Ala Lys Gln Met Met Glu Asn Ala Glu Trp Glu Ser Lys Pro Pro Pro
            965   970   975

Pro Gly Trp Arg Pro Lys Gly Leu Leu Val Ala His Leu His Glu His
            980   985   990

Lys Ser Ala Val Asn Arg Ile Arg Val Ser Asp Glu His Ser Leu Phe
        995   1000   1005

Ala Thr Cys Ser Asn Asp Gly Thr Val Lys Ile Trp Asn Ser Gln
    1010   1015   1020

Lys Met Glu Gly Lys Thr Thr Thr Thr Arg Ser Ile Leu Thr Tyr
    1025   1030   1035

Ser Arg Ile Gly Gly Arg Val Lys Thr Leu Thr Phe Cys Gln Gly
    1040   1045   1050

Ser His Tyr Leu Ala Ile Ala Ser Asp Asn Gly Ala Val Gln Leu
    1055   1060   1065

Leu Gly Ile Glu Ala Ser Lys Leu Pro Lys Ser Pro Lys Ile His
    1070   1075   1080

Pro Leu Gln Ser Arg Ile Leu Asp Gln Lys Glu Asp Gly Cys Val
    1085   1090   1095

77

```
Val Asp Met His His Phe Asn Ser Gly Ala Gln Ser  Val Leu Ala
    1100                1105                1110

Tyr Ala Thr Val Asn Gly Ser Leu Val Gly Trp Asp Leu Arg Ser
    1115                1120                1125

Ser Ser Asn Ala Trp Thr Leu Lys His Asp Leu Lys Ser Gly Leu
    1130                1135                1140

Ile Thr Ser Phe Ala Val Asp Ile His Gln Cys Trp Leu Cys Ile
    1145                1150                1155

Gly Thr Ser Ser Gly Thr Met Ala Cys Trp Asp Met Arg Phe Gln
    1160                1165                1170

Leu Pro Ile Ser Ser His Cys His Pro Ser Arg Ala Arg Ile Arg
    1175                1180                1185

Arg Leu Ser Met His Pro Leu Tyr Gln Ser Trp Val Ile Ala Ala
    1190                1195                1200

Val Gln Gly Asn Asn Glu Val Ser Met Trp Asp Met Glu Thr Gly
    1205                1210                1215

Asp Arg Arg Phe Thr Leu Trp Ala Ser Ser Ala Pro Pro Leu Ser
    1220                1225                1230

Glu Leu Gln Pro Ser Pro His Ser Val His Gly Ile Tyr Cys Ser
    1235                1240                1245

Pro Ala Asp Gly Asn Pro Ile Leu Leu Thr Ala Gly Ser Asp Met
    1250                1255                1260

Lys Ile Arg Phe Trp Asp Leu Ala Tyr Pro Glu Arg Ser Tyr Val
    1265                1270                1275

Val Ala Gly Ser Thr Ser Ser Pro Ser Val Ser Tyr Tyr Arg Lys
    1280                1285                1290

Ile Ile Glu Gly Thr Glu Val Val Gln Glu Ile Gln Asn Lys Gln
    1295                1300                1305

Lys Val Gly Pro Ser Asp Asp Thr Pro Arg Arg Gly Pro Glu Ser
    1310                1315                1320
```

78

Leu Pro Val Gly His His Asp Ile Ile Thr Asp Val Ala Thr Phe
    1325   1330   1335

Gln Thr Thr Gln Gly Phe Ile Val Thr Ala Ser Arg Asp Gly Ile
    1340   1345   1350

Val Lys Val Trp Lys
    1355

<210> 10
<211> 437
<212> PRT
<213> Homo sapiens

<400> 10

Met Thr Gln Leu Phe Leu Trp Glu Tyr Gly Asp Leu His Leu Phe Gly
1   5   10   15

Pro Asn Gln Arg Pro Ala Pro Cys Tyr Asp Pro Cys Glu Ala Val Leu
            20   25   30

Val Glu Ser Ile Pro Glu Gly Leu Asp Phe Pro Asn Ala Ser Thr Gly
        35   40   45

Asn Pro Ser Thr Ser Gln Ala Trp Leu Gly Leu Leu Ala Gly Ala His
    50   55   60

Ser Ser Leu Asp Ile Ala Ser Phe Tyr Trp Thr Leu Thr Asn Asn Asp
65   70   75   80

Thr His Thr Gln Glu Pro Ser Ala Gln Gln Gly Glu Glu Val Leu Arg
            85   90   95

Gln Leu Gln Thr Leu Ala Pro Lys Gly Val Asn Val Arg Ile Ala Val
            100   105   110

Ser Lys Pro Ser Gly Pro Gln Pro Gln Ala Asp Leu Gln Ala Leu Leu
        115   120   125

Gln Ser Gly Ala Gln Val Arg Met Val Asp Met Gln Lys Leu Thr His
    130   135   140

Gly Val Leu His Thr Lys Phe Trp Val Val Asp Gln Thr His Phe Tyr
145   150   155   160

Leu Gly Ser Ala Asn Met Asp Trp Arg Ser Leu Thr Gln Val Lys Glu

Leu Gly Val Val Met Tyr Asn Cys Ser Cys Leu Ala Arg Asp Leu Thr
            180   185   190

Lys Ile Phe Glu Ala Tyr Trp Phe Leu Gly Gln Ala Gly Ser Ser Ile
            195   200   205

Pro Ser Thr Trp Pro Arg Phe Tyr Asp Thr Arg Tyr Asn Gln Glu Thr
    210   215   220

Pro Met Glu Ile Cys Leu Asn Gly Thr Pro Ala Leu Ala Tyr Leu Ala
225   230   235   240

Ser Ala Pro Pro Pro Leu Cys Pro Ser Gly Arg Thr Pro Asp Leu Lys
            245   250   255

Ala Leu Leu Asn Val Val Asp Asn Ala Arg Ser Phe Ile Tyr Val Ala
            260   265   270

Val Met Asn Tyr Leu Pro Thr Leu Glu Phe Ser His Pro His Arg Phe
        275   280   285

Trp Pro Ala Ile Asp Asp Gly Leu Arg Arg Ala Thr Tyr Glu Arg Gly
    290   295   300

Val Lys Val Arg Leu Leu Ile Ser Cys Trp Gly His Ser Glu Pro Ser
305   310   315   320

Met Arg Ala Phe Leu Leu Ser Leu Ala Ala Leu Arg Asp Asn His Thr
            325   330   335

His Ser Asp Ile Gln Val Lys Leu Phe Val Val Pro Ala Asp Glu Ala
            340   345   350

Gln Ala Arg Ile Pro Tyr Ala Arg Val Asn His Asn Lys Tyr Met Val
        355   360   365

Thr Glu Arg Ala Thr Tyr Ile Gly Thr Ser Asn Trp Ser Gly Asn Tyr
    370   375   380

Phe Thr Glu Thr Ala Gly Thr Ser Leu Leu Val Thr Gln Asn Gly Arg
385   390   395   400

Gly Gly Leu Arg Ser Gln Leu Glu Ala Ile Phe Leu Arg Asp Trp Asp

Ser Pro Tyr Ile His Asp Leu Asp Thr Ser Ala Asp Ser Val Gly Asn
        420   425   430

Ala Cys Arg Leu Leu
        435

<210> 11
<211> 573
<212> PRT
<213> Homo sapiens

<400> 11

Met Leu Arg Leu Pro Thr Val Phe Arg Gln Met Arg Pro Val Ser Arg
1   5   10   15

Val Leu Ala Pro His Leu Thr Arg Ala Tyr Ala Lys Asp Val Lys Phe
        20   25   30

Gly Ala Asp Ala Arg Ala Leu Met Leu Gln Gly Val Asp Leu Leu Ala
        35   40   45

Asp Ala Val Ala Val Thr Met Gly Pro Lys Gly Arg Thr Val Ile Ile
        50   55   60

Glu Gln Ser Trp Gly Ser Pro Lys Val Thr Lys Asp Gly Val Thr Val
65   70   75   80

Ala Lys Ser Ile Asp Leu Lys Asp Lys Tyr Lys Asn Ile Gly Ala Lys
                85   90   95

Leu Val Gln Asp Val Ala Asn Asn Thr Asn Glu Glu Ala Gly Asp Gly
        100   105   110

Thr Thr Thr Ala Thr Val Leu Ala Arg Ser Ile Ala Lys Glu Gly Phe
        115   120   125

Glu Lys Ile Ser Lys Gly Ala Asn Pro Val Glu Ile Arg Arg Gly Val
    130   135   140

Met Leu Ala Val Asp Ala Val Ile Ala Glu Leu Lys Lys Gln Ser Lys
145   150   155   160

Pro Val Thr Thr Pro Glu Glu Ile Ala Gln Val Ala Thr Ile Ser Ala
    165   170   175

81

Asn Gly Asp Lys Glu Ile Gly Asn Ile Ile Ser Asp Ala Met Lys Lys
            180   185   190

Val Gly Arg Lys Gly Val Ile Thr Val Lys Asp Gly Lys Thr Leu Asn
            195   200   205

Asp Glu Leu Glu Ile Ile Glu Gly Met Lys Phe Asp Arg Gly Tyr Ile
            210   215   220

Ser Pro Tyr Phe Ile Asn Thr Ser Lys Gly Gln Lys Cys Glu Phe Gln
225   230   235   240

Asp Ala Tyr Val Leu Leu Ser Glu Lys Lys Ile Ser Ser Ile Gln Ser
            245   250   255

Ile Val Pro Ala Leu Glu Ile Ala Asn Ala His Arg Lys Pro Leu Val
            260   265   270

Ile Ile Ala Glu Asp Val Asp Gly Glu Ala Leu Ser Thr Leu Val Leu
            275   280   285

Asn Arg Leu Lys Val Gly Leu Gln Val Val Ala Val Lys Ala Pro Gly
            290   295   300

Phe Gly Asp Asn Arg Lys Asn Gln Leu Lys Asp Met Ala Ile Ala Thr
305   310   315   320

Gly Gly Ala Val Phe Gly Glu Glu Gly Leu Thr Leu Asn Leu Glu Asp
            325   330   335

Val Gln Pro His Asp Leu Gly Lys Val Gly Glu Val Ile Val Thr Lys
            340   345   350

Asp Asp Ala Met Leu Leu Lys Gly Lys Gly Asp Lys Ala Gln Ile Glu
            355   360   365

Lys Arg Ile Gln Glu Ile Ile Glu Gln Leu Asp Val Thr Thr Ser Glu
            370   375   380

Tyr Glu Lys Glu Lys Leu Asn Glu Arg Leu Ala Lys Leu Ser Asp Gly
385   390   395   400

Val Ala Val Leu Lys Val Gly Gly Thr Ser Asp Val Glu Val Asn Glu
            405   410   415

82

```
Lys Lys Asp Arg Val Thr Asp Ala Leu Asn Ala Thr Arg Ala Ala Val
            420                 425             430


Glu Glu Gly Ile Val Leu Gly Gly Gly Cys Ala Leu Leu Arg Cys Ile
        435             440             445


Pro Ala Leu Asp Ser Leu Thr Pro Ala Asn Glu Asp Gln Lys Ile Gly
    450             455             460


Ile Glu Ile Ile Lys Arg Thr Leu Lys Ile Pro Ala Met Thr Ile Ala
465             470             475                 480


Lys Asn Ala Gly Val Glu Gly Ser Leu Ile Val Glu Lys Ile Met Gln
            485             490                 495


Ser Ser Ser Glu Val Gly Tyr Asp Ala Met Ala Gly Asp Phe Val Asn
        500             505             510


Met Val Glu Lys Gly Ile Ile Asp Pro Thr Lys Val Val Arg Thr Ala
        515             520             525


Leu Leu Asp Ala Ala Gly Val Ala Ser Leu Leu Thr Thr Ala Glu Val
        530             535             540


Val Val Thr Glu Ile Pro Lys Glu Glu Lys Asp Pro Gly Met Gly Ala
545             550             555                 560


Met Gly Gly Met Gly Gly Gly Met Gly Gly Met Phe
            565             570
```

```
<210>   12
<211>   859
<212>   PRT
<213>   Homo sapiens

<400>   12
```

```
Met Ala Cys Leu His Glu Thr Arg Thr Pro Ser Pro Ser Phe Gly Gly
1               5               10              15


Phe Val Ser Thr Leu Ser Glu Ala Ser Met Arg Lys Leu Asp Pro Asp
            20              25              30


Thr Ser Asp Cys Thr Pro Glu Lys Asp Leu Thr Pro Thr His Val Leu
        35              40              45
```

Gln Leu His Glu Gln Asp Ala Gly Gly Pro Gly Gly Ala Ala Gly Ser
    50   55   60

Pro Glu Ser Arg Ala Ser Arg Val Arg Ala Asp Glu Val Arg Leu Gln
65   70   75   80

Cys Gln Ser Gly Ser Gly Phe Leu Glu Gly Leu Phe Gly Cys Leu Arg
            85   90   95

Pro Val Trp Thr Met Ile Gly Lys Ala Tyr Ser Thr Glu His Lys Gln
          100   105   110

Gln Gln Glu Asp Leu Trp Glu Val Pro Phe Glu Glu Ile Leu Asp Leu
        115   120   125

Gln Trp Val Gly Ser Gly Ala Gln Gly Ala Val Phe Leu Gly Arg Phe
        130   135   140

His Gly Glu Glu Val Ala Val Lys Lys Val Arg Asp Leu Lys Glu Thr
145   150   155   160

Asp Ile Lys His Leu Arg Lys Leu Lys His Pro Asn Ile Ile Thr Phe
        165   170   175

Lys Gly Val Cys Thr Gln Ala Pro Cys Tyr Cys Ile Leu Met Glu Phe
        180   185   190

Cys Ala Gln Gly Gln Leu Tyr Glu Val Leu Arg Ala Gly Arg Pro Val
        195   200   205

Thr Pro Ser Leu Leu Val Asp Trp Ser Met Gly Ile Ala Gly Gly Met
    210   215   220

Asn Tyr Leu His Leu His Lys Ile Ile His Arg Asp Leu Lys Ser Pro
225   230   235   240

Asn Met Leu Ile Thr Tyr Asp Asp Val Val Lys Ile Ser Asp Phe Gly
          245   250   255

Thr Ser Lys Glu Leu Ser Asp Lys Ser Thr Lys Met Ser Phe Ala Gly
        260   265   270

Thr Val Ala Trp Met Ala Pro Glu Val Ile Arg Asn Glu Pro Val Ser
        275   280   285

```
Glu Lys Val Asp Ile Trp Ser Phe Gly Val Val Leu Trp Glu Leu Leu
    290             295             300

Thr Gly Glu Ile Pro Tyr Lys Asp Val Asp Ser Ser Ala Ile Ile Trp
305             310             315             320

Gly Val Gly Ser Asn Ser Leu His Leu Pro Val Pro Ser Ser Cys Pro
            325             330             335

Asp Gly Phe Lys Ile Leu Leu Arg Gln Cys Trp Asn Ser Lys Pro Arg
            340             345             350

Asn Arg Pro Ser Phe Arg Gln Ile Leu Leu His Leu Asp Ile Ala Ser
        355             360             365

Ala Asp Val Leu Ser Thr Pro Gln Glu Thr Tyr Phe Lys Ser Gln Ala
    370             375             380

Glu Trp Arg Glu Glu Val Lys Leu His Phe Glu Lys Ile Lys Ser Glu
385             390             395             400

Gly Thr Cys Leu His Arg Leu Glu Glu Glu Leu Val Met Arg Arg Arg
            405             410             415

Glu Glu Leu Arg His Ala Leu Asp Ile Arg Glu His Tyr Glu Arg Lys
        420             425             430

Leu Glu Arg Ala Asn Asn Leu Tyr Met Glu Leu Asn Ala Leu Met Leu
        435             440             445

Gln Leu Glu Leu Lys Glu Arg Glu Leu Leu Arg Arg Glu Gln Ala Leu
    450             455             460

Glu Arg Arg Cys Pro Gly Leu Leu Lys Pro His Pro Ser Arg Gly Leu
465             470             475             480

Leu His Gly Asn Thr Met Glu Lys Leu Ile Lys Lys Arg Asn Val Pro
            485             490             495

Gln Lys Leu Ser Pro His Ser Lys Arg Pro Asp Ile Leu Lys Thr Glu
        500             505             510

Ser Leu Leu Pro Lys Leu Asp Ala Ala Leu Ser Gly Val Gly Leu Pro
    515             520             525
```

85

```
Gly Cys Pro Lys Ala Pro Pro Ser Pro Gly Arg Ser Arg Arg Gly Lys
    530                 535             540


Thr Arg His Arg Lys Ala Ser Ala Lys Gly Ser Cys Gly Asp Leu Pro
545                 550             555                 560


Gly Leu Arg Thr Ala Val Pro Pro His Glu Pro Gly Gly Pro Gly Ser
            565             570                 575


Pro Gly Gly Leu Gly Gly Gly Pro Ser Ala Trp Glu Ala Cys Pro Pro
            580             585                 590


Ala Leu Arg Gly Leu His His Asp Leu Leu Leu Arg Lys Met Ser Ser
        595             600             605


Ser Ser Pro Asp Leu Leu Ser Ala Ala Leu Gly Ser Arg Gly Arg Gly
    610             615             620


Ala Thr Gly Gly Ala Gly Asp Pro Gly Ser Pro Pro Ala Arg Gly
625             630             635                 640


Asp Thr Pro Pro Ser Glu Gly Ser Ala Pro Gly Ser Thr Ser Pro Asp
            645             650                 655


Ser Pro Gly Gly Ala Lys Gly Glu Pro Pro Pro Val Gly Pro Gly
            660             665             670


Glu Gly Val Gly Leu Leu Gly Thr Gly Arg Glu Gly Thr Ser Gly Arg
        675             680             685


Gly Gly Ser Arg Ala Gly Ser Gln His Leu Thr Pro Ala Ala Leu Leu
        690             695             700


Tyr Arg Ala Ala Val Thr Arg Ser Gln Lys Arg Gly Ile Ser Ser Glu
705             710             715                 720


Glu Glu Glu Gly Glu Val Asp Ser Glu Val Glu Leu Thr Ser Ser Gln
            725             730             735


Arg Trp Pro Gln Ser Leu Asn Met Arg Gln Ser Leu Ser Thr Phe Ser
            740             745             750


Ser Glu Asn Pro Ser Asp Gly Glu Glu Gly Thr Ala Ser Glu Pro Ser
    755             760             765
```

86

```
Pro Ser Gly Thr Pro Glu Val Gly Ser Thr Asn Thr Asp Glu Arg Pro
    770             775             780

Asp Glu Arg Ser Asp Asp Met Cys Ser Gln Gly Ser Glu Ile Pro Leu
785             790             795                     800

Asp Pro Pro Pro Ser Glu Val Ile Pro Gly Pro Glu Pro Ser Ser Leu
            805             810             815

Pro Ile Pro His Gln Glu Leu Leu Arg Glu Arg Gly Pro Pro Asn Ser
            820             825             830

Glu Asp Ser Asp Cys Asp Ser Thr Glu Leu Asp Asn Ser Asn Ser Val
            835             840             845

Asp Ala Leu Arg Pro Pro Ala Ser Leu Pro Pro
    850             855
```

<210>   13
<211>   2807
<212>   DNA
<213>   Homo sapiens

<400>   13
```
cttttgtgct gcggccgcgg agcccccgag ggcccagtgt tcaccatcat accaggggcc        60

agaggcgatg gcttgcctcc atgagacccg aacaccctct ccttcctttg ggggctttgt       120

gtctaccata agtgaggcat ccatgcgcaa gctggaccca gacacttctg actgcactcc       180

cgagaaggac ctgacgccta cccagtgtgt acttcgagat gtggtacccc ttggtgggca       240

gggtggggga gggcccagcc cctccccagg tggagagccg cccctgagc cctttgccaa        300

cagtgtcctg cagctacatg agcaggatgc aggggggccca gggggagcag ctgggtcacc       360

tgagagtcgg gcatccagag ttcgagctga cgaggtgcga ctgcagtgcc agagtggcag       420

tggcttcctt gagggcctct ttggctgcct gcgccctgtc tggaccatga ttggcaaagc       480

ctactccact gagcacaagc agcagcagga agacctttgg gaggtcccct ttgaggaaat       540

cctggacctg cagtgggtgg gctcaggggc ccagggtgct gtcttcctgg ggcgcttcca       600

cggggaggag gtggctgtga agaaggtgcg agacctcaaa gaaaccgaca tcaagcactt       660

gcgaaagctg aagcacccca acatcatcac tttcaagggt gtgtgcaccc aggctccctg       720

ctactgcatc ctcatggagt tctgcgccca gggccagctg tatgaggtac tgcgggctgg       780

ccgccctgtc acccctcct tactggttga ctggtccatg ggcatcgctg gtggcatgaa        840

ctacctgcac ctgcacaaga ttatccacag ggatctcaag tcacccaaca tgctaatcac       900
```

87

```
ctacgacgat gtggtgaaga tctcagattt tggcacttcc aaggagctga gtgacaagag      960

caccaagatg tcctttgcag ggacagtagc ctggatggcc cctgaggtga tccgcaatga     1020

acctgtgtct gagaaggtcg acatctggtc ctttggcgtg gtgctatggg aactgctgac     1080

tggtgagatc ccctacaaag acgtagattc ctcagccatt atctggggtg tgggaagcaa     1140

cagtctccat ctgcccgtgc cctccagttg cccagatggt ttcaagatcc tgcttcgcca     1200

gtgctggaat agcaaaccac gaaatcgctc atcattccga cagatcctgc tgcatctgga     1260

cattgcctca gctgatgtac tctccacacc ccaggagact tactttaagt cccaggcaga     1320

gtggcgggaa gaagtaaaac tgcactttga aaagattaag tcagaaggga cctgtctgca     1380

ccgcctagaa gaggaactgg tgatgaggag gagggaggag ctcagacacg ccctggacat     1440

cagggagcac tatgaaagga agctggagag agccaacaac ctgtatatgg aacttaatgc     1500

cctcatgttg cagctggaac tcaaggagag ggagctgctc aggcgagagc aagctttaga     1560

gcggaggtgc ccaggcctgc tgaagccaca cccttcccgg ggcctcctgc atggaaacac     1620

aatggagaag cttatcaaga agaggaatgt gccacagaag ctgtcacccc atagcaaaag     1680

gccagatatc ctcaagacgg agtctttgct ccctaaacta gatgcagccc tgagtggggt     1740

ggggcttcct gggtgtccta agggcccccc ctcaccagga cggagtcgcc gtggcaagac     1800

ccgtcaccgc aaggccagcg ccaaggggag ctgtggggac ctgcctgggc ttcgtacagc     1860

tgtgccaccc catgaacctg gaggaccagg aagcccaggg ggcctaggag ggggaccctc     1920

agcctgggag gcctgccctc ccgccctccg tgggcttcat catgacctcc tgctccgcaa     1980

aatgtcttca tcgtccccag acctgctgtc agcagcacta gggtcccggg gccggggggc     2040

cacaggcgga gctggggatc ctggctcacc acctccggcc cggggtgaca ccccaccaag     2100

tgagggctca gcccctggct ccaccagccc agattcacct gggggagcca aaggggaacc     2160

acctcctcca gtagggcctg gtgaaggtgt ggggcttctg ggaactggaa gggaagggac     2220

ctcaggccgg ggaggaagcc gggctgggtc ccagcacttg accccagctg cactgctgta     2280

cagggctgcc gtcacccgaa gtcagaaacg tggcatctca tcggaagagg aggaaggaga     2340

ggtagacagt gaagtagagc tgacatcaag ccagaggtgg cctcagagcc tgaacatgcg     2400

ccagtcacta tctaccttca gctcagagaa tccatcagat ggggaggaag gcacagctag     2460

tgaaccttcc cccagtggca cacctgaagt tggcagcacc aacactgatg agcggccaga     2520

tgagcggtct gatgacatgt gctcccaggg ctcagaaatc ccactggacc cacctccttc     2580

agaggtcatc cctggccctg aacccagctc cctgcccatt ccacaccagg aacttctcag     2640

agagcggggc cctcccaatt ctgaggactc agactgtgac agcactgaat tggacaactc     2700
```

88

caacagcgtt gatgccttgc ggcccccagc ttccctccct ccatgaaagc cactcgtatt   2760

ccttgtacat agagaaatat ttatataaat tatatatata tacatat   2807

<210> 14
<211> 350
<212> PRT
<213> Homo sapiens

<400> 14

Met Ala Cys Leu His Glu Thr Arg Thr Pro Ser Pro Ser Phe Gly Gly
1   5   10   15

Phe Val Ser Thr Leu Ser Glu Ala Ser Met Arg Lys Leu Asp Pro Asp
                20   25   30

Thr Ser Asp Cys Thr Pro Glu Lys Asp Leu Thr Pro Thr Gln Cys Val
            35   40   45

Leu Arg Asp Val Val Pro Leu Gly Gly Gln Gly Gly Gly Gly Pro Ser
        50   55   60

Pro Ser Pro Gly Gly Glu Pro Pro Pro Glu Pro Phe Ala Asn Ser Val
65   70   75   80

Leu Gln Leu His Glu Gln Asp Ala Gly Gly Pro Gly Gly Ala Ala Gly
                85   90   95

Ser Pro Glu Ser Arg Ala Ser Arg Val Arg Ala Asp Glu Val Arg Leu
                100   105   110

Gln Cys Gln Ser Gly Ser Gly Phe Leu Glu Gly Leu Phe Gly Cys Leu
            115   120   125

Arg Pro Val Trp Thr Met Ile Gly Lys Ala Tyr Ser Thr Glu His Lys
        130   135   140

Gln Gln Gln Glu Asp Leu Trp Glu Val Pro Phe Glu Glu Ile Leu Asp
145   150   155   160

Leu Gln Trp Val Gly Ser Gly Ala Gln Gly Ala Val Phe Leu Gly Arg
                165   170   175

Phe His Gly Glu Glu Val Ala Val Lys Lys Val Arg Asp Leu Lys Glu
            180   185   190

89

```
Thr Asp Ile Lys His Leu Arg Lys Leu Lys His Pro Asn Ile Ile Thr
        195                 200                 205

Phe Lys Gly Val Cys Thr Gln Ala Pro Cys Tyr Cys Ile Leu Met Glu
        210                 215                 220

Phe Cys Ala Gln Gly Gln Leu Tyr Glu Val Leu Arg Ala Gly Arg Pro
225                 230                 235                 240

Val Thr Pro Ser Leu Leu Val Asp Trp Ser Met Gly Ile Ala Gly Gly
                245                 250                 255

Met Asn Tyr Leu His Leu His Lys Ile Ile His Arg Asp Leu Lys Ser
                260                 265                 270

Pro Asn Met Leu Ile Thr Tyr Asp Asp Val Val Lys Ile Ser Asp Phe
        275                 280                 285

Gly Thr Ser Lys Glu Leu Ser Asp Lys Ser Thr Lys Met Ser Phe Ala
        290                 295                 300

Gly Thr Val Ala Trp Met Ala Pro Glu Val Ile Arg Asn Glu Pro Val
305                 310                 315                 320

Ser Glu Lys Val Asp Ile Trp Ser Phe Gly Val Val Leu Trp Glu Leu
                325                 330                 335

Leu Thr Gly Glu Ile Pro Tyr Lys Asp Val Asp Ser Ser Ala
                340                 345                 350


<210>  15
<211>  20
<212>  DNA
<213>  Homo sapiens

<400>  15
aaggaggaga taagttggag                                                    20


<210>  16
<211>  21
<212>  DNA
<213>  Homo sapiens

<400>  16
aacagtgctg cccacctctt c                                                  21


<210>  17
```

90

```
<211>   21
<212>   DNA
<213>   Homo sapiens

<400>   17
aaccagccag gcagaggttt t                                              21


<210>   18
<211>   21
<212>   DNA
<213>   Homo sapiens

<400>   18
aaggctacaa tctgtctgcc a                                              21


<210>   19
<211>   21
<212>   DNA
<213>   Homo sapiens

<400>   19
aacattgaag agctgcttcc g                                              21


<210>   20
<211>   21
<212>   DNA
<213>   Homo sapiens

<400>   20
aatctgcaaa catgccaggc c                                              21


<210>   21
<211>   21
<212>   DNA
<213>   Homo sapiens

<400>   21
aactcagacc tttatcctga c                                              21


<210>   22
<211>   21
<212>   DNA
<213>   Homo sapiens

<400>   22
aagttcgatg agaggctggt a                                              21


<210>   23
<211>   21
<212>   DNA
<213>   Homo sapiens

<400>   23
aagctctctt caactctcct c                                              21
```

91

```
<210>  24
<211>  21
<212>  DNA
<213>  Homo sapiens

<400>  24
aatggtcaac gtcctcaagg c                                              21


<210>  25
<211>  21
<212>  DNA
<213>  Homo sapiens

<400>  25
aacctcagca tcactaagac c                                              21


<210>  26
<211>  21
<212>  DNA
<213>  Homo sapiens

<400>  26
aactggaagg atgacagtga c                                              21


<210>  27
<211>  21
<212>  DNA
<213>  Homo sapiens

<400>  27
aagcagtgct ggtggaaagc a                                              21


<210>  28
<211>  21
<212>  DNA
<213>  Homo sapiens

<400>  28
aacatggact ggcgttcact g                                              21


<210>  29
<211>  21
<212>  DNA
<213>  Homo sapiens

<400>  29
aaggctctac tcaacgtggt g                                              21


<210>  30
<211>  21
<212>  DNA
<213>  Homo sapiens
```

```
<400>  30
aatcccatat gcccgtgtca a                                          21


<210>  31
<211>  21
<212>  DNA
<213>  Homo sapiens

<400>  31
aacacaaatg aagaagctgg g                                          21


<210>  32
<211>  21
<212>  DNA
<213>  Homo sapiens

<400>  32
aaattgccaa tgctcaccgt a                                          21


<210>  33
<211>  21
<212>  DNA
<213>  Homo sapiens

<400>  33
aagaacagtg attattgagc a                                          21


<210>  34
<211>  21
<212>  DNA
<213>  Homo sapiens

<400>  34
aattgctgaa cttaaaaagc a                                          21


<210>  35
<211>  21
<212>  DNA
<213>  Homo sapiens

<400>  35
aagcagcagc aggaagacct t                                          21


<210>  36
<211>  21
<212>  DNA
<213>  Homo sapiens

<400>  36
aagaggaact ggtgatgagg a                                          21


<210>  37
```